

# Life Science

## Course Description

This course is designed to ignite curiosity and foster a deep understanding of the living world. Students will embark on an exciting journey through the fundamental concepts of biology, exploring the intricate details of cells, the dynamics of ecosystems, the principles of heredity and genetics, as well as energy, populations, nutrient cycles and biomes of ecosystems. Throughout the course, students will engage in interactive activities, laboratory experiments, and collaborative projects that encourage scientific exploration and discovery. By the end of the course, students will have a solid foundation in life science, preparing them for more advanced studies in biology and related fields.

## Prerequisites

No extensive prior knowledge is required.

## Course Objective

By the end of this course, students will develop a comprehensive understanding of the fundamental principles of life science, including cell biology, ecosystems, genetics, evolution, and the flow of matter and energy in living systems, while fostering scientific inquiry and critical thinking skills through hands-on experiments and collaborative projects.

## Learning Outcomes

By the end of this course students should be able to:

- Describe the characteristics of living things.
- Differentiate between plant and animal cells.
- Understand the basic principles of heredity and genetics.
- Analyze the components and interactions within ecosystems.
- Explain the mechanisms of adaptation and natural selection.

## Modules:

- What is Life Science?
- Genetics
- Ecosystems
- Matter and Energy
- Biodiversity

Next Generation Science Standards

Science and Engineering Practices	
Asking questions and defining problems	X
Developing and using models	
Planning and carrying out investigations	X
Analyzing and interpreting data	X
Using mathematics and computational thinking	
Constructing explanations and designing solutions	X
Engaging in argument from evidence	X
Obtaining, evaluating, and communicating information	X

Crosscutting Concepts	
Patterns	X
Cause and effect	X
Scale, proportion, and quantity	
Systems and system models	X
Energy and matter	X
Structure and function	X
Stability and change	X

Disciplinary Core Ideas	
MS-LS1-1. Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.	X
MS-LS1-3. Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.	X
MS-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.	X
MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.	X
MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.	X
MS-LS1-5. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.	X